

**Application No.: 10/560,951**  
**Filing Date: October 6, 2006**

### **REMARKS**

Claims 1, 3, 4, 6, 7, 10, 12, 13, and 21-27 are amended herein. The amendments to Claims 1, 12 and 27 are supported by the specification, for example, at page 8, lines 22-25, Example 1 (page 13, line 7, through page 14, line 1), page 10, lines 11-34, and original Claim 9. The amendments to the remaining claims are to correct formalities and/or to bring the claim language into conformity with the amendments to Claims 1, 12 and 27, and these amendments do not change the scope of the claims. Accordingly, the amendments to the claims do not add new matter.

Claims 9, 11 and 15-20 are canceled herein without prejudice to, or disclaimer of, the subject matter contained therein. Applicants maintain that the cancellation of a claim makes no admission as to its patentability and reserve the right to pursue the subject matter of the canceled claim in this or any other patent application.

New Claims 31 and 32 are added. Support for new Claim 31 is found in the specification, for example, at page 8, lines 28-34 and Examples 1 and 2 (page 13, line 7, through page 14, line 6). Support for new Claim 32 is found in the specification, for example, at page 10, lines 3-34 and original Claims 1, 2, 9 and 11. Accordingly, the new claims do not add new matter.

Upon entry of the amendments, Claims 1, 2-8, 10 and 12-32 are pending.

### **Information Disclosure Statement**

The Office Action objects to the Information Disclosure Statement (IDS) filed August, 9, 2006 as failing to provide a copy of Reference 3. Applicants apologize for any omission and submit herewith as Exhibit 1 a copy of Reference 3 for consideration by the Examiner.

### **Claims Objection**

The Office Action objects to the recitation of "which contains alcoholic OH group" in Claim 27. Claim 27 is amended to remove the objected-to language. Accordingly, this objection is moot.

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**Claim Rejections under 35 U.S.C. §112, Second Paragraph**

Claims 1, 9, 11 and 15-20 are rejected under 35 U.S.C. §112, second paragraph as being indefinite for reciting the phrase, “highly suitable for boiling and water treatment and retort treatment.” The objected-to phrase has been deleted from the claims. Accordingly, this rejection is moot.

Claim 11 is rejected under 35 U.S.C. §112, second paragraph as being indefinite for being unclear whether or not the aromatic polyamide layer is an additional layer. Claim 11 is canceled herein. New Claim 32 specifically recites that the aromatic polyamide layer is an additional layer. In view of the present claim language, Applicants submit that Claim 32 is clear and definite.

Claims 9 and 15-20 are rejected under 35 U.S.C. §112, second paragraph as being indefinite for reciting the limiting transitional phrase “consisting of” while also indicating that “at least one” of each recited layer is present. The rejected claims are canceled herein; however, Claim 1 is amended to now recite the objected-to language. Applicants respectfully submit that this language is not improper, and is fully consistent with USPTO practice and the meaning of the term “consisting of” as laid out in the M.P.E.P. and the courts. M.P.E.P. §2111.03 provides:

The transitional phrase “consisting of” excludes any element, step, or ingredient not specified in the claim. *In re Gray*, 53 F.2d 520, 11 USPQ 255 (CCPA 1931); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 1948) (“consisting of” defined as “closing the claim to the inclusion of materials other than those recited except for impurities ordinarily associated therewith.”).

Thus, the transitional phrase “consisting of” excludes any element, step, or ingredient not specified in the claim, but the transitional phrase “consisting of” places no additional limitations on elements which are specified in the claim. There is restriction in 35 U.S.C. §112, second paragraph or in jurisprudence relating to the interpretation of the transition term “consisting of” that requires the specific number of the specified elements to be recited.

Claim 1, as amended, specifies elements “at least one saponified ethylene-vinyl acetate copolymer layer” and “at least one polyamide layer”. The transitional phrase “consisting of” in

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Claim 1 excludes any element, step, or ingredient not specified in the claim. Thus, the transitional phrase “consisting of” excludes any layer that is not a saponified ethylene-vinyl acetate copolymer layer or a polyamide layer from being present in the film. Since Claim 1 recites “at least one saponified ethylene-vinyl acetate copolymer layer” and “at least one polyamide layer”, these elements are not excluded or limited by recitation of the transition phrase “consisting of”. The recitation of “consisting of” and specifying “at least one” layer are not inconsistent since “consisting of” places no special limitation on that which is specified in the claim. Those skilled in the art will understand that the claimed film contains at least one saponified ethylene-vinyl acetate copolymer layer and at least one polyamide layer, but does not contain any layer that is not a saponified ethylene-vinyl acetate copolymer layer or a polyamide layer. As such, the recitation of “consisting of” and “at least one” in Claim 1 and other claims, does not represent a recitation that is indefinite under 35 U.S.C. §112, second paragraph.

#### **Claim Rejections under 35 U.S.C. §103**

Claims 1, 3-5, 9, 10, 13-17, 21-23, 27, 28 and 30 are rejected under 35 U.S.C. §103 as being obvious over Yamamoto (JP 11-199741) in view of Shibuya (JP 06-345919). The Office Action states that Yamamoto teaches a film with a layer containing polyamide, an alcohol and EVOH, and another layer which could be a polyamide layer. The Office Action states that Shibuya teaches a film with two outer polyamide layers and an inner layer containing polyamide and EVOH.

Claims 1 and 27 are independent claims and the remainder of the claims ultimately depends from either Claim 1 or Claim 27. Claims 1 and 27 are directed to multilayer films “consisting of” “at least one saponified ethylene-vinyl acetate copolymer layer” and “at least one polyamide layer” in which the polyamide layer comprises “an aliphatic polyamide as a principal ingredient and an aromatic polyamide in concentration of 2.0 to 10 wt.%.”

No combination of Yamamoto or Shibuya teaches such a film. As such, Claims 1 and 27 are non-obvious over Yamamoto and Shibuya. In particular, Yamamoto teaches methods of preparing a layered product, where the layers are laminated onto “other base materials” and the lamination is accomplished “using well-known adhesives.” *Yamamoto* at paragraph [0012]. Thus, Yamamoto teaches a film containing further layers in addition to at least one saponified

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ethylene-vinyl acetate copolymer layer and at least one polyamide layer. As such, Yamamoto differs from the film of Claims 1 and 27. Further, Yamamoto provides no guidance as to any amount of aromatic polyamide present in the polyamide layer. Accordingly, Yamamoto does not teach a polyamide layer comprising an aliphatic polyamide as a principal ingredient and an aromatic polyamide in concentration of 2.0 to 10 wt.% as recited in Claims 1 and 27.

Shibuya does not teach that which is missing in Yamamoto. In particular, Shibuya provides no guidance as to any amount of aromatic polyamide present in the polyamide layer. Accordingly, Shibuya also does not teach a polyamide layer comprising an aliphatic polyamide as a principal ingredient and an aromatic polyamide in concentration of 2.0 to 10 wt.% as recited in Claims 1 and 27. As such, no combination of Yamamoto and Shibuya teaches this element of Claims 1 and 27. In view of the above, Applicants submit that Claims 1 and 27, and all claims dependent therefrom, are non-obvious over Yamamoto and Shibuya.

Claim 11 is rejected under 35 U.S.C. §103 as being obvious over Yamamoto in view of Shibuya and Tanaka (JP 2002-172742). The Office Action states that Tanaka teaches an aromatic polyamide in a polyamide layer.

Claim 11 is canceled herein. Applicants address this rejection as it applies to new Claim 32.

New Claim 32 is non-obvious over the cited references because the cited references teach away from the claimed film.

Tanaka (machine translation obtained by Applicants' representative on March 16, 2009 from the Japanese Patent Office online Model Gazette Data Base (<http://www4.ipdl.inpit.go.jp/Tokujitu/tjsogodben.ipdl?N0000=115>), a copy of which is enclosed herewith as Exhibit 2) teaches:

*In this invention, Z layer needs to comprise the xylylene system polyamide 20 - 80 mass %, and 20 to aliphatic polyamide 80 mass %. The smell retaining property improvement effect of the film obtained as the content of xylylene system polyamide is less than 20% is not enough, and if it exceeds 80%, layer indirect arrival power with an aliphatic polyamide layer will decline. Tanaka at paragraph [0012] (emphasis added).*

Thus, Tanaka teaches that the polyamide must contain at least 20% xylylene-containing polyamide because content of less than 20% or more than 80% causes an adverse effect. As such, Tanaka teaches away from an aromatic polyamide concentration of 2.0 to 10 wt.% as recited in new Claim 32. Accordingly, Tanaka would discourage one of ordinary skill from preparing a film in accordance with Claim 32. As such, Tanaka cannot be used to render Claim 32 obvious. Yamamoto and Shibuya cannot render Claim 32 obvious because no combination of Yamamoto and Shibuya teaches all elements of Claim 32. Therefore, Claim 32 is non-obvious over the cited references.

Claims 6-8, 12, 18-20 and 24-26 are rejected under 35 U.S.C. §103 as being as being obvious over Yamamoto in view of Shibuya and Matsui (JP 2002-248721). The Office Action states that Matsui teaches an antioxidant in polyamide layers.

Claims 6-8, 12, 18-20 and 24-26 are non-obvious over the cited references because the cited references teach away from the claimed films and method.

Matsui teaches that adhesive resin layer (Y), which secures firm adhesion of the boundary between the polyamide resin (X) layer and the thermoplastic resin (Z) layer, is an essential component of the invention. *Matsui* at Abstract and paragraph [0032]. Applicants' multilayer film does not contain an adhesive layer. In order to arrive at Applicants' claimed films and method, one of ordinary skill must proceed contrary to the teachings of Matsui which emphasizes adhesive resin layer (Y) as an essential component of the invention. As such, Matsui teaches away from the presently claimed multilayer film and related method because Matsui teaches the importance of containing an adhesive resin layer, which is contrary to the claims. Accordingly, Matsui would discourage one of ordinary skill from preparing a film in accordance with the claims. Thus, Matsui cannot be used to render the claims obvious.

Yamamoto and Shibuya cannot render the claims obvious because no combination of Yamamoto and Shibuya teaches all elements of the rejected claims. The Office Action suggests that Shibuya teaches adding antioxidant to the EVOH-containing layer, and, thus, it would have been obvious to add antioxidant to the polyamide layers. However, Shibuya provides no teaching to add antioxidant to polyamide layers, and there is no teaching in Shibuya or Yamamoto that antioxidants would have a beneficial effect in the polyamide layer. As such,

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there is no basis in Shibuya or Yamamoto for modifying the polyamide layer to contain all elements of the claims.

Furthermore, Applicants have found that antioxidant in the polyamide layer results in improved haze suppression during retort. *Specification* at pages 13-22. This improved property would not be expected in view of the teaching of Shibuya or any other cited reference. As such, Applicants' claimed films and methods provide superior properties that are unexpected over the cited references. Accordingly, Applicants' claims are further non-obvious over the cited references.

### CONCLUSION

In view of the above, Applicants respectfully maintain that claims are patentable and request that they be passed to issue. Applicants invite the Examiner to call the undersigned if any remaining issues might be resolved by telephone.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: March 16, 2009

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6810545/031609

# Exhibit 1



For Innovation

Your ref : HMJ04154GB

Application No: GB0525785.2

Applicant : Gunze Limited

Latest date for reply: 18 September 2006

Examiner : Robert Mirams

Tel : 01633 814677

Date of report : 17 May 2006

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## Patents Act 1977

### Examination Report under Section 18(3)

#### Basis of the examination

1. In the examination of your application I have taken account of the pages 23 and 24 you filed with your agent's letter of 19 December 2005 to amend the application as it was printed by WIPO during the international phase. I have not taken into account the International Preliminary Examination Report dated 21 July 2005 as only the original Japanese version is on file.

#### Novelty

2. The invention as defined in at least claims 1, 3, 4 and 12 to 16 is not new because it has already been disclosed in the following document:

JP11199741A (NIPPON SYNTHETIC) e.g. abstracts and paragraph 0011 to 0012 of the enclosed computer translation.

3. Thus this document is concerned with a packaging material comprising a composition formed by melt blending a polyamide resin with an alcoholic compound and adding a saponified ethylene/vinyl acetate copolymer. It may be coextruded as a layer with further layers which may be polyamide. It is said to have excellent retort sterilisation and transparency properties.

#### Clarity

4. The description at page 2 indicates that the multilayer film is characterised by a **specific** polyamide layer as well as a specific saponified ethylene-vinyl acetate layer. However claim 1 does not specify any requirements for the polyamide layer. In this respect the description at page 7 lines 19 to 23 and page 12 lines 21 to 23 indicates that the polyamide layer is characterised by the presence of an antioxidant. Clarification is required.
5. Further the description at page 12 lines 4 to 5 indicates it to be essential that the multilayer film have a thickness of 10 to 50 microns. However claim 1 is silent about this feature. Clarification is again required.





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[Examination Report contd.]

6. It should apparently be made clear that the ethylene-vinyl acetate referred to in claim 11 at page 24 line 10 is **saponified** and that the term "alcohol based resin" at page 13 line 21 is amended to "alcohol based **compound**".
7. The abbreviation "etc" at page 4 line 33, page 6 line 35, page 7 lines 9 and 17, page 10 lines 1 and 8 and the word "like" at page 4 line 34, page 5 lines 2, 4, 26, 27 and 29, page 6 lines 7 and 20, page 7 lines 14 and 24, page 8 line 17, page 9 lines 6 and 14, page 10 lines 10 and 32 and page 11 lines 9 and 13 are obscure and should be avoided.
8. Items 1 to 12 on pages 2 to 4 should be made consistent with the claims.

**Conflict with a corresponding PCT patent application**

9. This application appears to be similar to your international patent application published under number WO2004/113071, having the same priority date and designating GB (European Patent). If patents granted on these two applications relate to the same invention, the Comptroller will in due course revoke the patent granted on the present application unless **either** you amend the present specification to remove the conflict **or**, before the date of grant of the present application under Section 25(1), you begin proceedings to surrender the European patent(UK). Of course if the GB designation is withdrawn before the grant of the European patent, no action will be required under Section 73(2).

# Exhibit 2

**Tanaka [JP,2002-172742,A]**

\* NOTICES \*

JPO and INPIT are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

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**CLAIMS**

[Claim(s)]

[Claim 1]A biaxial-stretching laminated film which has Z layer which consists of X zone which consists of an ethylene-vinylacetate copolymer saponification thing (EVOH), Y layer which consists of aliphatic polyamide, the xylylene system polyamide 20 - 80 mass % and the aliphatic polyamide 20 - 80 mass % and which consists of at least three layers.

[Claim 2]The biaxial-stretching laminated film according to claim 1 in which X zone does 5-15 mass % content of talc.

[Claim 3]The biaxial-stretching laminated film according to claim 1 or 2 whose lamination is Y/Z/X/Z/Y.

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**DETAILED DESCRIPTION**

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention has the pinhole-proof nature which was excellent in the polyamide film, and the outstanding gas barrier property which an EVOH film has about a polyamide system laminated film, has the further outstanding smell retaining property, and relates to the suitable polyamide system laminated film for wrapping, such as foodstuffs and drugs.

[0002]

[Description of the Prior Art]The laminated film which consists of a polyamide film and an EVOH film has the pinhole-proof nature which was excellent in the polyamide film, transparency, dimensional stability, and the gas barrier property that was excellent in the EVOH film, and is used as wrapping, such as foodstuffs and drugs. However, this laminated film has the outstanding oxygen interception nature.

On the other hand, when the stinking strong thing was packed as contents, not the level that can never be satisfied about a smell retaining property but a dressing, soy sauce or bean paste, etc. has the problem that a smell will begin to leak in only several days, and received restriction in the use in many cases.

Since this laminated film has weak intensity compared with a polyamide monolayer film and the pinhole-proof nature to the crookedness under low temperature, a shock, etc. is insufficient,

contents leak owing to and fall and the pinhole produced from the exterior as a result of thrust  
\*\*\*\* by contents carry out appearance -- etc. -- a trouble may occur and it cannot be functionally  
satisfied enough as wrapping.

[0003]

[Problem(s) to be Solved by the Invention]There is a technical problem of this invention in  
providing the polyamide system laminated film which has a smell retaining property, gas barrier  
property, and pinhole-proof nature.

[0004]

[Means for Solving the Problem]In a laminated film which consists of an EVOH layer and an  
aliphatic polyamide layer as a result of inquiring wholeheartedly, in order that this invention  
persons may solve an aforementioned problem, By laminating a layer which consists of xylylene  
system polyamide and aliphatic polyamide, it found out that a laminated film which has an  
outstanding smell retaining property, gas barrier property, and pinhole-proof nature could be  
provided, and this invention was completed. That is, the gist of this invention is as follows.

[0005](1) A biaxial-stretching laminated film which has Z layer which consists of X zone which  
consists of an ethylene-vinylacetate copolymer saponification thing (EVOH), Y layer which  
consists of aliphatic polyamide, the xylylene system polyamide 20 - 80 mass % and the aliphatic  
polyamide 20 - 80 mass % and which consists of at least three layers.

(2) A biaxial-stretching laminated film which X zone indicated to (1) which does 5-15 mass %  
content of talc.

(3) A biaxial-stretching laminated film which lamination indicated to (1) which is Y/Z/X/Z/Y, or  
(2).

[0006]

[Embodiment of the Invention]Next, this invention is explained in detail. X zone consists of an  
ethylene-vinylacetate copolymer saponification thing (EVOH) in this invention. Gas barrier  
property and intensity are excellent in the being [ the content of an ethylene ingredient / the  
saponification degrees of 25-35 mol % and vinyl acetate / more than 96 mol % and also more  
than 99 mol % ] thing, and EVOH's is preferred. If it is easy to generate gel less than [ 25  
mol % ] and the content of an ethylene ingredient exceeds 35-mol %, the characteristics obtained,  
such as intensity, gas barrier property, etc. of a film, fall, and it is not desirable.

[0007]In this invention, it is preferred to add talc to EVOH of X zone. A smell retaining property,  
gas barrier property, and a pinhole-proof are improved by addition of talc. As for the mean  
particle diameter of talc, less than 1.3 micrometers is preferred. The transparency of a film is  
spoiled and it may become an exterior and a problem as particle diameter becomes large. the  
addition of talc to EVOH -- five to 15 mass % -- it is seven to 13 mass % preferably. When there  
are few improvement effects of gas barrier property or a smell retaining property and the case of  
less than 5 mass % exceeds 15 mass %, the increase in the fish eye by the transparency of a film  
or the secondary aggregation of talc is brought about, and it is not desirable.

[0008]To EVOH of X zone, an ethylene vinyl acetate system copolymer, an olefin unsaturated  
carboxylic acid copolymer, or its metal salt may be added in order to raise pinhole-proof nature  
further.

[0009]In this invention, the aliphatic polyamide which is a constituent of Y layer and Z layer, It  
is thermoplastics which has an amide bond (-CONH-) in the intramolecular and in which melt  
molding is possible, Polycapramide (nylon 6), polyhexamethylene adipamide (Nylon 66),  
Although polyhexamethylene sebacamide (Nylon 610), polyamino UNDEKAMIDO (Nylon 11),  
poly lauryl amide (Nylon 12) and these copolymers, a mixture, etc. are mentioned, especially  
nylon 6 is preferred.

[0010]To the aliphatic polyamide of Y layer, the performance of a film in the range which is not spoiled Talc, Lubricant, such as silica, alumina, magnesia, calcium carbonate, ethylene-bis-stearylamine, and calcium stearate, paints, a thermostabilizer and an antioxidant, a weathering agent, fire retardant, a plasticizer, and a release agent can also be blended.

[0011]In this invention, as a typical example of the xylylene system polyamide which is a constituent of Z layer, Polymetaxylylene adipamide is especially preferred although polymetaxylylene adipamide, polymetaxylylene SEBAKAMIDO, polymetaxylylene SUPERAMIDO, polyparaxylylene adipamide and these copolymers, and a mixture are mentioned.

[0012]In this invention, Z layer needs to comprise the xylylene system polyamide 20 - 80 mass %, and 20 to aliphatic polyamide 80 mass %. The smell retaining property improvement effect of the film obtained as the content of xylylene system polyamide is less than 20% is not enough, and if it exceeds 80%, layer indirect arrival power with an aliphatic polyamide layer will decline.

[0013]Although the biaxial-stretching laminated film of this invention needs to comprise at least three sorts of layers, X zone, Y layer, and Z layer, lamination may be changed according to a use and the purpose.

[0014]In order to avoid the trouble which originates in the absorptivity of physical properties, such as intensity, the gas barrier property, etc. of the laminated film obtained, the film fracture at the time of film manufacture, or EVOH as typical lamination, The X zone which consists of EVOH(s) is not used as an outer surface layer, it is [ way ] desirable and 5 lamination of Y/Z/X/Z/Y is preferred.

[0015]In this invention, as the film production method of an unextended laminated film, After fusing several sorts of resin which constitutes each class in a separate extrusion machine and piling it up on multilayer structure within a feed block, Although the method (mono- manifold type) of extruding from a dice, the multi-manifold method which piles up several sorts of fused resin on multilayer structure, and extrudes it in a dice, etc. can be used, since the thickness accuracy of each class is high, the multi-manifold method is preferred. After co-extruding from a dice, an unextended laminated film is obtained by quenching on a cooling roller.

[0016]As an extension method of an unextended laminated film, although methods, such as flat type serial biaxial stretching, flat type simultaneous biaxial stretching, and the tubular method, can be used, film thickness accuracy is good, and since the physical properties of a film width direction are uniform, a flat type simultaneous biaxial-stretching method is the optimal.

[0017]After carrying out wet treatment of the unextended laminated film in a flat type simultaneous biaxial-stretching method in the warm water tub which carried out temperature control, with a clip, grasp the end of a film and at the temperature of 80-200 \*\*. The biaxial-stretching laminated film of desired thickness can be obtained by carrying out simultaneous biaxial stretching with draw magnification with an every direction [ each ] of about 2.5 to 4 times, and heat-treating at the temperature of 180-220 \*\* with the relaxation rate of 3 to 8% to a film width direction.

[0018]Although the thickness in particular of the biaxial-stretching laminated film of this invention is not limited, when using it as a flexible wrapping material, it is usually considered as a thickness of 10-50 micrometers. If thickness is thin, coexistence of pinhole-proof nature, and gas barrier property and a smell retaining property will become difficult, and if thickness is thick, transparency and bending-fatigue-resistance nature will get worse.

[0019]

[Example]Next, an example explains this invention still more concretely. The raw material and

measuring method which were used for evaluation of an example and a comparative example are as follows.

[0020](1) Raw material Polly epsilon-KAPURAMIDO (nylon 6) : Unitika, Ltd. make A1030BRF polymeta-xylene adipamide (MXD6): Mitsubishi Gas Chemical Co., Inc. make MX nylon 6011EVOH: Kuraray Co., Ltd. make Eval EP-F101BZ (rate % of 32 mol of ethylene copolymerization)

Talc: Japanese talc company make Super talc SG-2000 [0021](2) The small bag (method bag of three of 80 mm x 80 mm of outer sizes) which laminated adhesives/LLDPE (50 micrometers) to the measuring method \*\* smell retaining property biaxial-stretching laminated film, and filled it up with a dressing and soy sauce using the film was manufactured. This small bag was put into a 100-ml reagent bottle, it was kept under 20 \*\*65%RH atmosphere, and the existence of the bad smell leak was checked by organoleptics for every temporality. The valuation basis was carried out as follows.

x: With no bad smell leak 20 days ten days and 20 days after bad smell leak check \*\*: and after bad smell leak check O: [0022]\*\* OX-TRAN2/20 made from oxygen transmittance Modern Control were used, and it measured on condition of 20 \*\* and 85%RH. (Unit: ml/(m<sup>2</sup> and day-MPa)/(one-sheet thickness))

[0023]\*\* According to Method 2017 of Fed.Test MethodStd. 101C shown in crookedness-proof pinhole nature MIL-B-131F, The sample (12 inches x 8 inches) was grasped to cylindrical shape 3.5 inches in diameter, and the number of pinholes after giving crookedness 500 times under 5 \*\* conditions with what is called a GERUBO tester (made by a physical science industrial company) estimated as the initial grasping interval of 7 inches, and a grasping interval of 1 inch at the time of the maximum crookedness.

[0024]\*\* After exfoliating a laminated film end with an interlaminar-peeling powerful width of 15 mm in an interface, exfoliation strength was measured on condition of for 300-mm/in exfoliation speed by the T peel method in 20 \*\* and 65%RH atmosphere using the autograph by Shimadzu Corp.

[0025]To example 1EVOH, 10 mass % boiled talc comparatively and it added, and with the biaxial extrusion machine set as 210 \*\*, melt kneading was carried out and it pelletized. Melt kneading of what mixed [ nylon 6 ] 70 mass % for 30 mass % and MXD6 was carried out with the biaxial extrusion machine set as 270 \*\*, and the pellet was obtained. Subsequently, nylon 6 is extruded at 250 \*\* from the 1st extrusion machine using the three-sort co-extrusion T die for five layers (Y layer), A talc content EVOH pellet is extruded at the temperature of 215 \*\* from the 2nd extrusion machine (X zone), The mixed pellet of nylon 6 and MXD6 is extruded from the 3rd extrusion machine, respectively (Z layer), The film laminated in order of Y/Z/X/Z/Y for the multi-manifold type dice was stuck to cooling drum lifting which carried out temperature control to the skin temperature of 18 \*\*, it quenched, and the thickness of each class obtained the unextended laminated film with a total thickness of 150 micrometers by

Y/Z/X/Z/Y=45/5/50/5/45micrometer. After leading the obtained unextended laminated film to the warm water tub which carried out temperature control to 60 \*\* and performing water absorption processing for 90 seconds, simultaneous biaxial stretching was carried out and the 15-micrometer-thick biaxial-stretching laminated film was obtained. Extension conditions are 3.3 times in a lengthwise direction at the temperature of 175 \*\* at 3 times and a transverse direction, and heat treatment conditions are the temperature of 210 \*\*, and 5% of a relaxation rate.

[0026]Except having made talc to example 2EVOH additive-free, it extruded and extended by the same method as Example 1, and the 15-micrometer-thick biaxial-stretching laminated film was obtained.

[0027]Except having changed the nylon 6 of an example 3Z layer, and the mixture ratio of MXD6, it extruded and extended by the same method as Example 1, and the 15-micrometer-thick biaxial-stretching laminated film was obtained.

[0028]Except not supplying the mixed pellet of nylon 6 and MXD6 to the comparative example 1 3rd extrusion machine, but throwing in only nylon 6 instead, it extruded and extended by the same method as Example 2, and the 15-micrometer-thick biaxial-stretching laminated film was obtained.

[0029]the method as Example 1 that it is the same except having set only to MXD6 the pellet supplied to the comparative example 2 3rd extrusion machine -- extrusion -- it extended and the 15-micrometer-thick biaxial-stretching laminated film was obtained.

[0030]the method as Example 1 that it is the same except having changed the nylon 6 of a pellet fed into the comparative example 3 3rd extrusion machine, and the mixing ratio of MXD6 -- extrusion -- it extended and the 15-micrometer-thick biaxial-stretching laminated film was obtained.

[0031]

[Table 1]

		Z層組成比 (質量%)	X層 タル添加量 (質量%)	耐屈曲 ピンホール性 (個数)	酸素透過度 (*1)	層間剥離 強力 (N/cm)	保香性	
		ナイロン6/MXD6					ドレッシング	醤油
実 施 例	1	30/70	10	8	27	2.4	○	○
	2	30/70	0	22	55	2.5	△	△
	3	70/30	10	9	28	2.7	△	○
比 較 例	1	100/0	0	20	60	2.7	×	×
	2	0/100	10	12	20	0.3	○	○
	3	90/10	10	19	57	2.1	×	△

\*1 単位 ml / (m<sup>2</sup>・day・MPa) / (1枚厚み)

未延伸フィルムの厚み構成は全て45/5/50/5/45μm (Y/Z/X/Z/Y)

[0032]As shown in Table 1, the smell retaining property is improved and the film which provided the interlayer who mixed nylon 6 and MXD6 does not almost have the fall of interlaminar-peeling intensity, either. A smell retaining property improves further by carrying out specific amount content of the talc in an EVOH layer like Example 1, and barrier performance and pinhole-proof nature also improve. On the other hand, since the comparative example 1 did not provide the interlayer containing MXD6 and did not make EVOH contain talc, its smell retaining property was low and the bad smell leak produced it in [ small ] ten days. Although the comparative example 2 shows the outstanding smell retaining property, since the adhesive property of nylon 6 and MXD6 is bad, interlaminar-peeling intensity is falling remarkably and it is insufficient for practical use. [ of intensity ] The comparative example 3 has low addition of MXD6 in an interlayer, although the smell retaining property is improving by addition of talc to the inside of EVOH, and sufficient smell retaining property improvement effect is not acquired.

[0033]

[Effect of the Invention]As mentioned above, according to this invention, it has the intensity which was excellent in the polyamide film, and dimensional stability and the gas barrier property

which was excellent in EVOH, and the film with which the smell retaining property has been improved can be obtained by providing the layer containing xylylene system polyamide. By what is made for EVOH to contain talc of the quantity of a prescribed range according to this invention. Without spoiling the intensity of a film or raising material cost, it becomes possible to obtain the film with which a smell retaining property, gas barrier property, and a pinhole-proof have been improved, and the use range of the gas-barrier-property laminated film restricted until now spreads greatly. Therefore, the industrial utility value of the laminated film manufactured by this invention is very high.

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[Translation done.]